

*The Hungarian Technology Foresight Programme*

# **HEALTH AND LIFE SCIENCES**

**Panel Report**

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In 1998 the National Committee for Technological Development (OMFB) launched a technology foresight programme named TEP after its Hungarian acronym. The main objective of the programme was to make a contribution to improving the long-term competitiveness of the country's economy. This would enable new opportunities to be identified in the development of both the market and technology that would improve the quality of life of the population. By analysing major changes in the economy and society as well as new achievements in science and technology, TEP defines the key issues and the areas where strategic decisions need to be made that will be crucial for the country's development in the next 15-25 years.

The Steering Group and the thematic panels have assessed the current situation, outlined different scenarios for the future, and formulated their recommendations to implement the favoured approach.

The thematic panels analysed the key aspects of the following, closely interrelated areas:

- Human resources (education and employment)
- Health and life sciences
- Information technology, telecommunications and the media
- Protection and development of the natural and built environment
- Manufacturing and business processes
- Agribusiness and food industry
- Transport

The TEP reports, analyses and findings of the Delphi survey may be accessed electronically via the home page of the Hungarian Ministry of Education at the following website address: <http://www.om.hu>.

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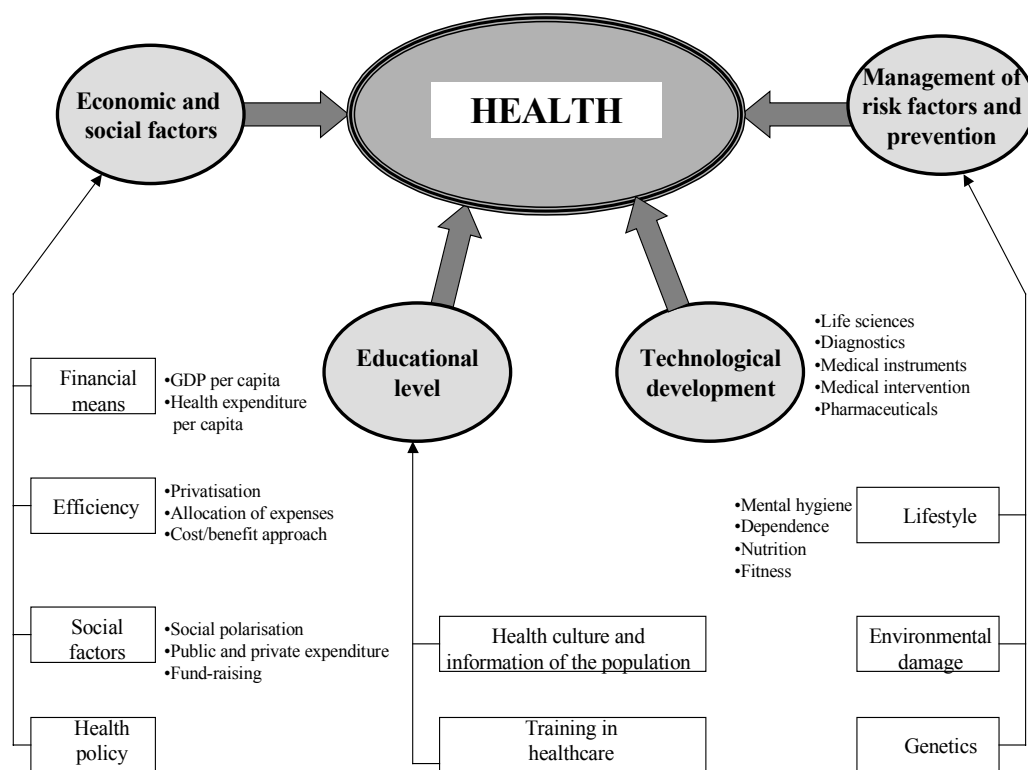
## Introduction

Recent opinion holds that the health status of the population presents a more accurate picture of global and national development in the 21<sup>st</sup> century than economic parameters. The health industry, the field that includes health-related services and products, is becoming one of the largest sectors of the economy in developed countries. The social and economic effects of the latest scientific findings will draw the attention of governments, business leaders and also families to this particular area.

All these factors confirm that one of the most important governmental tasks is to improve the health status of society. Attention should therefore be focused on factors affecting health and the associated issues. Our panel examined this exceptionally complex field from two different aspects:

- the health factors of the quality of life
- the opportunities for the Hungarian economy in the health industry.

Our approach focuses on the quality of life rather than the status of health.



*Figure 1. Health*

Sources: C. Muray, A. Lopez, The Global Burden of Disease, 1996.

WHO, Life in the 21<sup>st</sup> century – A vision for all, The World Health Report, 1998.

The panel took account of the factors summarised in Figure 1 when formulating possible scenarios of the anticipated changes in the quality of life. Social factors were

given special consideration in this work as the research carried out in the 1990s has shown the increasingly marked relationship between the mortality statistics and the polarisation of income rather than actual income level.

The 'Health and Life Sciences' panel of the TEP analysed the actual state of Hungarian healthcare, pointed out its crucial problems and made a recommendation for a new strategy in health policy in the light of the economic, social and technological trends.

## Current situation and main trends in the Hungarian healthcare sector

### Demographic and health status of Hungary

The population of Hungary is declining on a continuous basis. Adults in the over-65 age group accounted for only 7.5 per cent of the population in 1949 and their population share has now almost doubled in 50 years. On 1 January 1998 they accounted for 14.4 per cent of the population and their ratio is expected to reach 18.5 per cent by 2020.

The permanent deterioration of mortality statistics seen during the last decades was replaced by a moderate but constant decrease in mortality in the last four years. Consequently, in 1997 the number of deaths was 11 000 less than the peak in 1993 (the year with the highest mortality). The life expectancy of men is lower now than it was 3 decades ago and the mortality rate of women between 40 and 54 years is higher than its 1960 level. The hardest-hit group are middle-aged men with the mortality rate of this age group being reminiscent of the mortality data of the 1930s.

*Table1. Difference between the Hungarian and European Union average in some common causes of death, 1995, thousands of persons*

Cause of death	Hungary	On the assumption that EU average mortalities prevail in Hungary	Difference
Cardiovascular disease	38	12	26
Neoplasm (cancer)	32	15	17
Liver disease	13	2	11
Total	83	29	54

(Ádány et al., 1998)

In the mid-1990s one in five men died from ischaemic heart disease. The second most common cause of death was cerebrovascular disease, followed by lung cancer, liver cirrhosis and suicide respectively. Amongst females the leading causes of death were ischaemic heart disease and cerebrovascular disease.<sup>1</sup> These were followed by breast cancer, liver cirrhosis and lung cancer respectively.

<sup>1</sup> The former was responsible for 23 per cent and the latter accounted for 16 per cent of the female death toll in 1997.

The data in Table 1 are worth due consideration. Lowering the Hungarian mortality rate to the EU average would save 54 000 lives each year, which would exceed the annual rate of population 'loss' or decrease. These data suggest that *the population would no longer decrease if Hungarian mortality (and morbidity) rates in the major diseases were to approach the average EU levels.*

## **Socio-economic factors**

According to OECD data,<sup>2</sup> per capita health expenditure in Hungary amounted to USD 611 in 1996. Between 1989 and 1991 the proportion of health spending of GDP increased from 4.9 per cent to 6.5 per cent in Hungary. This may be attributed to two factors, namely the shrinking real GDP figures and an increase in the real value of health expenditure.

Since 25 per cent of Hungary's population exists below the poverty line (World Bank, 2000), unfavourable morbidity data may not be considered surprising.

The polarisation of healthcare services (that is the differences in the access to and level of these services) is primarily determined by the relative share of public and private expenditure within total health spending. In OECD countries public health expenditure grew at a higher rate than total health expenditure during the 1960s and 1970s. In the European OECD countries the share of public spending in health amounted to 68 per cent in the 1960s reaching a peak of 81 per cent in the early 1980s. It has dropped moderately in recent years, representing 78 per cent in 1992 and 76 per cent in 1997.

Private health expenditure rose in Hungary during the 1990s with a particular increase in the privately co-financed part of the pharmaceutical bill. Although private health insurance and employer-related voluntary health funds both exist in Hungary they only account for a very small share of current total health expenditure. Although a system of supplementary health insurance is expected to emerge, it is likely that user fees (direct private co-financing) will also constitute the largest segment of private health expenditure in Hungary.

The healthcare systems in EU countries may be divided into two groups according to the share of public health expenditure within the GDP, namely tax-financed and mandatory insurance-financed healthcare systems. Public expenditure usually represents a much smaller share of GDP in tax-financed systems than in the other system. Tax-financed systems react faster to changes in the economic environment and it is easier to curb expenditure in these systems. These experiences should be taken into consideration when preparing and implementing the Hungarian healthcare reform.

Both international and Hungarian sociological research prove unanimously that social division (polarisation) and the lack of social cohesion have a pronounced negative impact on the lower social strata or classes, thus leading to higher national mortality

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<sup>2</sup> OECD in Figures 1999, <http://www.oecd.org>



(death) and morbidity (relative incidence of particular diseases) rates and to a deterioration in the quality of life.

### ***Economic aspects of healthcare***

The inadequate wages of healthcare employees is one of the major problems in Hungarian healthcare. Between 1991 and 1996 total employment fell by approximately 30 per cent within the country and employment in healthcare and the social services fell by 16 per cent in the same period. The reduction of real wages was the only viable way to avoid higher unemployment growth in these sectors. This may be seen most clearly in the fact that the share of the total wage bill of the healthcare and social services sectors within the national economy remained roughly constant in spite of the increasing share of these sectors in terms of total employment.<sup>3</sup> The difference between the national and sectoral average wage was only 6 per cent in 1991 but this had grown to an astonishing 20 per cent by 1996. In the coming period a wage increase is likely to be one of the major factors contributing to expenditure growth within the sector. At the same time the number of physicians compared to the total population appears too high in international comparison.

At the moment various ownership forms, ranging from public (central government, municipal) ownership to non-profit making and private ownership, all co-exist in the Hungarian healthcare sector. The state- and municipal owned facilities play the major role in the provision of specialised healthcare whilst in basic healthcare provision the predominant forms are municipal ownership and the contracting-out to private providers. Private ownership forms (contracting-out) are prevalent in dental care and diagnostic services particularly in the machine- and technology-intensive fields (dialysis, lithotripter treatments, CT, etc).

In 1996 the pharmaceutical bill accounted for 2.2 per cent of the Hungarian GDP which is the highest share of GDP spent in this area amongst the OECD countries with the exception of the Czech Republic. The proportion of the pharmaceutical bill within healthcare expenditure is likely to increase on a worldwide basis in the future. The proportion in Hungary will probably remain above the European average but the share of the pharmaceutical bill in health expenditure is expected to diminish somewhat, primarily as a result of growing expenses in other (staff, diagnostic) fields and not as a consequence of a reduction in pharmaceutical prices.

The reduction of healthcare expenditure growth is a global goal for governments and societies. Numerous new methods and/or techniques have been implemented to achieve this and we present some of these below.

- Most of the basic principles of GCP (Good Clinical Practice) applied mandatorily in drug testing may also be applied in general hospital practice as a form of *quality assurance*. These principles include the conformity (standardisation) of therapeutic processes (via therapy protocols) and the temporary audits of the conditions of health provision by central authorities. Hungarian hospitals have a lot to do in these fields and the enforcement of EU regulations is expected to accelerate this process in the future.

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<sup>3</sup> This varied between 7.6 and 7.8 per cent between 1992 and 1996.

- ❑ *Remote Care* means the use of health services or information from a long distance. The general opinion of the Hungarian medical profession is that there is not much need for expensive remote-diagnostic services in Hungary as the medical culture (knowledge of physicians) is at a relatively high level throughout the country. Nevertheless other remote care services, such as the remote monitoring of patients' cardiovascular functions, are already being applied in Hungary.
- ❑ Efficiency may be increased by *the establishment and integration of medical information systems*. Setting up computer networks in Hungarian healthcare institutions has already started.
- ❑ *Evidence-Based Medicine* (EBM) is by now supported by an extensive network of huge databases. Clinical protocols and clinical 'technology assessments' are already available in no time via the Internet, free of charge and in full text format.
- ❑ *Pharmaco-economics* became an individual discipline in the last decade. It investigates the efficacy of pharmaceuticals according to their economic or cost efficiency.

### ***Health policy***

*The basic purpose of health policy is to improve the health status of the population.* According to generally accepted state-of-the-art theories, five models may be used to classify healthcare systems.

- ❑ *The strictly planned, 'command economy' model* comprises a centralised, command-like system structure with the amount of material (physical and financial), human resources and their distribution also being under central control.
- ❑ *The classic market economy* model of healthcare system is the other 'extreme', where market rules prevail and tough competition exists between the services and providers which is regulated by the laws of supply and demand without any kind of government intervention.
- ❑ *The adaptive planning model* is a much 'softer' version of the classic command economy model; in this model the planning process becomes decentralised and its functions are delegated to local authorities. At the same time the government retains a significant influence on the planning process. Hungarian healthcare operated in accordance with this model in the late 1980s.
- ❑ *The regulated market model* differs from the classic market economy model in the method of government intervention in healthcare in the interests of some economically and socially vulnerable groups. The government operates protective mechanisms that conform to the market to reduce the negative effects of the market on vulnerable groups.
- ❑ In the *planned market system* the market in the healthcare sector emerges as determined by the government and not as a result of spontaneous developments. The health policy selects and implements some elements of the market where competition takes place mostly between public (state-owned) institutions (but in any case primarily non-profit making facilities). This characteristic helps to maintain the major influence of the state and municipal health policy and keep the influence of private capital on the operation of the system on a tight leash. The

Hungarian healthcare system has operated according to these principles since the beginning of the 1990s.

In order to estimate health expenditure the following need to be ascertained: (A) the share of capital accumulation and private consumption within the GDP; (B) the respective shares of publicly and privately (market income) financed consumption within private consumption (or the ratio of market income to social expenditure); and (C) the proportions of health expenditure and other social expenditure (education, family support, pension, etc.) within publicly-financed private consumption (social expenditure in a wider sense). *These ratios or shares are influenced to a great extent by the economic policy of the government in power.*

Having considered the current situation, the panel examined four possible development paths for the healthcare sector:

- (1) the growth of health expenditure exceeds GDP growth;
- (2) the growth rate of health expenditure equals the GDP growth rate;
- (3) the growth rate of health expenditure equals the growth rate of private consumption; and
- (4) the growth rate of health expenditure falls somewhat behind private consumption growth rates.

On the basis of our analysis we were able to conclude that if the highest forecast average GDP growth rate (4 per cent per annum) is achieved and provided the growth of public expenditure on healthcare even exceeds this rate (namely 4.5 per cent per annum), then the real value of public health expenditure will be approximately 175 per cent higher in 2020 than it is today. (In this scenario public health expenditure would amount to 6.2-6.7 per cent of GDP while total expenditure on healthcare would reach 8-10 per cent of GDP.) On the other hand, if we only assume an average 2 per cent GDP growth in this period and also that public health expenditure growth will lag behind this rate (1.5 per cent per annum), then the real value of public health expenditure will only be some 40 per cent higher in 2020 than it is now. (In this scenario public health expenditure would amount to 4.9-5.4 per cent of GDP while total health expenditure would reach 6-8 per cent of GDP).

## **Health education for the general public and training for healthcare professionals**

### ***Health culture and health education for the population***

There is a strong relationship between the level of education and the health status of the population. Although nowadays the level of expected knowledge of social issues is quite extensive in Hungary and covers various fields, it unfortunately does not include basic health information. Teaching on health issues is an ‘on-off’ phenomenon in the Hungarian education system; the government ordered teaching on health issues as an independent subject as early as 1882 but withdrew it in 1901. This pattern has been evident ever since this time, as it is sometimes taught as a regular subject and sometimes

not included in the curriculum. The lack of teachers with a proper health education is also a problem.

The number of health publications aimed at the general public has also increased considerably in Hungary in the last decade. However, the hospitals and other healthcare institutions have not yet fully realised the importance of PR work. Lacking in professionals and appropriate resources, the widespread and successful methods applied elsewhere are not yet apparent in the provision of health information.

International experience has proved the efficiency of a broad supply of online services with regard to public health education. There are two major obstacles preventing a wider use of the Internet in this field in Hungary: access to the net is not as universal or widespread as in developed countries and most of the information is written in foreign languages (mostly in English).

### ***The training of healthcare professionals***

The training of healthcare professionals is likely to change a great deal in the medium term due partly to the change in social needs and demand. These changes will include the emergence of some new fields in health-related education and the reorganisation of the training of health personnel. The following trends and tendencies may be expected to shape the process of change:

- ❑ The average level of educational attainment of nurses is currently low. All nurses have at least a full secondary school education ('leaving certificate') and the proportion of nurses with a college degree should increase.
- ❑ In higher education (both in medical training and in the training for other health personnel) complementary medicine should be taught to undergraduate, graduate and post-graduate students.
- ❑ Health personnel with new types of secondary level qualifications (including lifestyle counsellors, alternative physiotherapists and masseurs) should emerge and be increasingly able to find employment in the sector.
- ❑ Permanent or recurrent further education for healthcare professionals is likely to become mandatory in the near future. Distance education may become its main form and computer-assisted online examination may be used to assess student performance.

### **Technological development**

Scientific publications deal with the expected developments in *life sciences* and the consequences of these developments offer popular topics for science fiction. In this chapter we have only addressed some key words in the areas that most influence the health status of the country and present good opportunities for Hungarian R&D.

The exploration of the human genome and its consequences, such as:

- Curing monogenic diseases by gene surgery
- Revealing inherited genetic mutations
- Revealing the molecular background of memory, learning, senescence, malignant tumours and autoimmune diseases
- Developing new pharmaceuticals and diagnostic methods.

The development of diagnostic techniques, medical instruments and robotisation with the help of information science will lead to drastic changes in the whole system of health provision. Online connections between hospitals, health centres ('polyclinics'), GPs and even patients in home care together with new imaging diagnostics and the application of simple diagnostic kits will have a major influence on medical intervention (and also on appropriately controlled 'self-treatment').

## **Management of risk factors and prevention**

### ***Risk factors***

We have only addressed the most important factors determining the status of health in Hungary in relation to prevention.

*Smoking* is the most significant risk factor of many common diseases (for example chronic obstructive pulmonary disease, cardiovascular disease, cancer of the trachea, bronchus and lung, etc.). A drop in the use of tobacco amongst men and an increase amongst women were apparent between 1984 and 1994 in Hungary.

The *alcohol consumption* habits of the population are reflected by the death toll of chronic liver diseases and liver cirrhosis. In this group of diseases Hungary occupies a leading (i.e. poor) position in international statistics. Mortality rates have increased steeply since the beginning of the 1970s.

The *nutrition* of the Hungarian population has many unfavourable aspects as far as health hazards are concerned. 58 per cent of males and 62 per cent of females are obese. The daily calorie intake exceeds the ideal level and the composition of diet is also unfavourable. The consumption of animal proteins and saturated fatty acids is high with a low intake of polyunsaturated fatty acids. Consequently, the blood cholesterol level was higher than normal in 47 per cent of the population examined. Dietary fibre intake is also low in spite of the fact that 70 per cent of the population regularly eats cooked vegetables. The consumption of raw vegetables and fruit is inadequate, especially in the winter (40 per cent of the population rarely eat raw vegetables and fruits). The intake of micro-elements and vitamins is also inadequate; sodium intake is high while that of potassium, iron, calcium, magnesium, vitamin C and folic acid (folate) is low.

The *environment* has a great effect on health. Air pollution is primarily a by-product of traffic in Hungary. The air is polluted in 13 per cent of the country's territory and 43 per cent of the population live in this area. The main pollutants are carbon dioxide, nitrogen dioxide, carbon monoxide and precipitating dust. There are no exact data on the concentration of pollutants that are present in relatively low concentrations (such as lead, cadmium, nickel) and their effects on the health of the affected communities are still unknown. Ninety seven per cent of the population have access to running water and most of them drink water of an adequate quality according to public health standards.

There are only local problems in this respect (mainly in regions with a high concentration of small, underdeveloped villages).

### ***Mental health***

The aim of prevention in the field of mental health is to train people effectively to live in a healthy way. The goal is to make people more able to influence their own behaviour (individual ways of living, healthy lifestyle, etc) in the sphere of their private relations (family and work) as well as their social relations (moral values, social identity).

In this field a complete change of attitude is required in healthcare: patients should be considered as responsible, competent individuals. This change may be based on the health-oriented, non-medical understanding of human problems and prevention in this field should therefore go beyond the boundaries of healthcare. This change would replace the traditional methods of mental help centred around hospitals or health institutions with a differentiated system of mental care provision and a greater reliance on outpatient care in local health centres (polyclinics) together with solutions available outside the boundaries of health organisations.

## **Economic opportunities**

### **The Hungarian pharmaceutical industry**

The globalisation of the pharmaceutical industry is a major long-term trend. It has its impacts on the development of new products as well as the registration and manufacturing requirements. One of the major driving forces behind horizontal integration is that the capital required to develop innovative products (new drugs) – estimated at USD 0.5 billion per product – may only be recovered if the drug is introduced in many different countries of the world simultaneously.

The Hungarian pharmaceutical market has been liberalised since the beginning of the 1990s. While in 1990 locally produced drugs accounted for 73.7 per cent of the domestic market, their market share fell to approximately 42.5 per cent in 1997. There are some 13,000 employees working directly in the pharmaceutical industry (drug production) and its upstream industry employs almost the same number. The total income in the industry was HUF 204.7 billion in 1998, which equates to 2.6 per cent of the total sales revenue of Hungarian industry. More than half of the production was exported to foreign markets. The profitability of the industry may be considered very favourable under the current Hungarian circumstances. There is a strong demand for the shares of pharmaceutical companies quoted on the stock exchange. The production of pharmaceuticals has the largest R&D capacity at company level in the Hungarian economy.

Nine out of the 27 Hungarian pharmaceutical producers account for more than 90 per cent of the domestic trade of Hungarian pharmaceuticals. Seven companies are in majority foreign ownership (the majority of shares in six of these companies were acquired by professional investors from abroad).

Nowadays the Hungarian pharmaceutical industry is primarily considered a generic producer meeting international standards and producing a wide range of products as the patents of the original products with large proportions of turnover have already expired. *Hungarian companies have fallen far behind foreign competitors in applying biotechnology. In addition to this they are also faced with fierce competition from new producers in the generic product market* (mainly Far Eastern producers – e.g. China, India).

As far as exports from this industry are concerned, the favourable market position achieved previously on the market of the former socialist countries still has a major impact on sales. This market position is being preserved and increased using up-to-date marketing and management methods (a network of visiting pharmaceutical agents, the formation of joint ventures, etc.).

### **The Hungarian medical technology and diagnostics industry**

The size of the Hungarian market was USD 123 million in 1997 and imports accounted for 85-90 per cent of the market. The largest product groups are single-use products (30 per cent) and imaging and patient-monitoring systems (each with 20 per cent). Diagnostics make up 5 per cent.

The import ratio was only 40-50 per cent before 1990, but it rose dramatically as a result of the transition to the market economy. The domestic output of the industry had fallen to less than 50 per cent of its pre-transition level by 1992 and a slight increase has been evident since 1993.

With regard to products, the main objective of domestic producers is to secure a good place for themselves in the medium segment of the market (good average quality products) rather than aiming at the high-tech end of the market. However, a technological audit conducted by the OECD in the middle of the 1990s revealed outstanding standards of quality in certain product segments. These primarily comprise electronic cardiological instruments, image-processing software and certain prostheses and implants. Innovative small ventures operate in this sector which would deserve special support from the government.

### **The domestic R&D sector in life sciences**

The R&D of life sciences in Hungary is represented by three main disciplines: biology (including biochemistry, biophysics and molecular biology), medical and agricultural sciences.

Although more than one-third of the domestic R&D personnel work in the field of life sciences, total spending in the field barely exceeds 10 per cent of the domestic R&D expenditure. The present distribution of public research grants and subsidies does not appear to favour life sciences.

This seems even more serious in view of the world-wide increase in the importance of life sciences in the last few decades and the shift in emphasis within the field towards

applied research and experimental development. This is especially true for molecular biology, playing an increasingly important role in the research in modern cell-biology, genetics, embryology, immunology, neurobiology and biotechnology. International trends in the pharmaceutical industry have had some favourable effects on the Hungarian R&D process: the share of outsourcing has risen continuously since 1990 in the field of pharmaceutical research all over the world reaching 17 per cent by 1996. The size of the market for research contracts or contracting-out in life sciences exceeded USD 4 billion world-wide in 1997.

The results of Hungarian life science research are appreciated throughout the world in many fields. The direct and indirect revenue-generating capacity of the life science-related part of the Hungarian R&D sector seems fairly sizeable; only a relatively small part of this was actually realised, however, during the 1990s.

Hungarian pharmaceutical companies generally only contract out clinical trials to independent research laboratories. However, the optimum proportion of R&D assignments contracted out to independent subcontractors should be at least 25 per cent in the Hungarian life science-based industry.

## **The Scenarios**

### **General Trends**

When preparing the different ‘scenarios’ and visions we assumed that the following conditions would hold true in the next 20-25 years:

- ❑ The Hungarian economy would become more open; the country will not only be granted membership in the EU but would become more deeply integrated into the world economy in the new enlarged EU.
- ❑ Steady economic growth and long-term macro-economic balance would be maintained throughout the period.
- ❑ Some ‘integration-related losses’ may also occur – some social groups with fairly stable economic backgrounds at present may lose their ability to adapt to the new situation.
- ❑ The international trends of labour market developments in developed EU countries would become also prevalent in Hungary: there will be a lasting and irreversible decrease in employment in the active age group with a parallel increase in self-employment and atypical/irregular jobs.
- ❑ The weight and significance of the non-profit sector would increase within the economy and the partial privatisation of basic public services would continue or be completed although the dominance of the various forms of public funding will be retained in this process. This trend would also be a characteristic of the Hungarian social security and healthcare systems.
- ❑ Health would become a more valuable and important issue in society, at least for the second half of the period.



- Quality control and a consumer protection-oriented control of the use of and access to health services would become universal in the healthcare sector (defined in the narrow sense), whilst in other markets the role of health-oriented control of products and services will strengthen.

Based on these trends some typical paths of action or ‘scenarios’ may be outlined for health policy that should be taken into consideration by governments.

## **Some model scenarios**

### ***Scenario 1: Health-oriented multi-sectoral (HOM) health policy***

An improvement in the health status of the population and a reduction in the social differences in health status are the focus of HOM health policy. To achieve these ambitious goals health risks (risk factors) should be diminished and the establishment of a health-reinforcing environment also appears to be instrumental. Human resource development becomes a major government priority; this will also include the improvement of the health status of the population as a policy goal.

The transformation of the present health policy, concentrating solely on the operation of the therapeutic network (i.e. healthcare institutions) in line with HOM health policy, takes time. Furthermore, the necessary pre-requisites do not emerge spontaneously: conscious governmental policy is needed in the next two decades to ensure that the required changes take place. The vision is based on the assumption that this change in health policy paradigms will be realised by the end of the period.

Social conditions develop favourably. Economic inequalities between the different regions of the country decrease, partly due to grants coming from the structural funds of the EU. Income differences also decrease due to conscious government action (covering economic, regional, employment, tax and social policy). Due to macro-economic priorities and constraints, public health expenditure is not expected to grow at a higher rate than GDP. Public health expenditure retains its 5.5-6 per cent share (the 1997 level) within the GDP. This, however, means a significant growth in the real value of this expenditure under the given assumptions: in 2020 the real value of public health expenditure will be 2.5 times higher than it was in 1997. Private expenses will grow even faster and reach 35 per cent of total expenditure. In 2020 Hungary will spend 8.5-9.2 per cent of its GDP on health services and products.

The role of the regions in public administration increases partly as a consequence of the country’s accession to the EU. Cooperation and competition is present both in the operation and functioning of healthcare institutions.

Hospitals enjoy a great degree of independence within the framework of varied forms of ownership and management. Wages in the healthcare sector increase at a higher rate than in the national economy as a whole (to a certain degree this is financed by a reduction in employment in the sector). Owing to the widening private sector there is an increase in the differentiation of formal incomes within the healthcare sector. The level of educational attainment in the population increases considerably.

There is a shift in government priorities concerning health: greater emphasis is given to the improvement of the quality of life and the creation of the pre-requisites for a healthy

lifestyle. This is achieved by way of a conscious policy within the framework of a thoroughly planned and elaborate long-term sectoral programme requiring social cooperation. Civil organisations working on health protection, consumer protection and the promotion of the interests of people with disabilities and older people receive more prominent support from the government. Prevention has top priority even within the functions of healthcare provision. This will be based on a new system of incentives and a prevention-oriented shift in medical training towards relevant knowledge and a new approach. Multi-level, nationally coordinated systems of prevention and care are developed for some diseases with a high death rate in order to diagnose the disease at an early stage and provide effective therapy. The basic structural characteristics of the healthcare system are preserved: public funding retains its dominance in financing, while mixed ownership prevails as far as providers (the service sector) are concerned. A well-defined range of basic healthcare services is universally granted to the citizenry. The range of basic services is determined and regularly re-examined by a selected national authority; representatives from community groups and NGOs will also take part in this work. Services and products which are not part of this basic range are provided for money (for those who can afford it or have supplementary insurance). The level of health knowledge increases rapidly within the population as health education becomes a mandatory part of the primary and secondary school curricula. The mass media will also give much more space to health-related information, especially information aimed at promoting an appropriate (healthier) way of life.

### ***Model scenario 2: Efficiency-oriented, expenditure curbing (EOEC) health policy***

EOEC health policy is based on two main priorities: the share of public resources in healthcare finance should be reduced on the one hand, and on the other the public health system should be operated from available public resources at maximum efficiency.

In this scenario the majority of the people are ready and increasingly capable of making health decisions (concerning the use of various health services) and buy the necessary health services for themselves in a market where proper regulation is guaranteed and some control is exercised by the authorities. This majority primarily insists that the healthcare institutions funded by public means or social insurance provide strictly defined, uniform, cheap services with equal access. It accepts that this service and provision is limited and must therefore be supplemented by privately purchased market services.

Groups or persons with insufficient resources only have partial, or, in some cases, no access to acceptable healthcare (to the extent allowed by social compensation mechanisms). The share of public funding in healthcare diminishes to 60-65 per cent. There is ample scope for non-profit making (health fund-based) or profit-making (private insurance company-based) ways of self-help or self-provision, not only in supplementary services but also in many fields of basic healthcare. Private savings for health purposes are encouraged by the state through (tax) incentives and preferences. The central or local government responsibility for health provision becomes relative and is challenged frequently by recurring public debates. These centre around issues such as the definition and precise listing of mandatory public services (health provision) and

access to these, bargaining regarding the size of co-payments (privately paid fees for the use of certain public services), the extent and mechanisms of social compensation or allowances to those with insufficient resources to buy healthcare for themselves and the burden of health provision for people with addictions and other negligent or 'non-cooperating' groups, etc.

Providers in the various sectors may receive public funding from publicly financed healthcare fund(s) if they are subject to strict norms, strong competition for public procurement and controlled by the funding body. At the same time, private insurers create a significantly more solvent market for their services than the current one. The EOEC healthcare programme is reduced by necessity to three non-financial requirements: it has to provide a mandatory minimum of care (emergency and public health tasks), meet additional international requirements (competitive law, product inspection, occupational healthcare) and accommodate certain short-term policies (e.g. preference or dispreference of certain social strata and/or circumstances of life).

The EOEC health policy is capable of contributing to a decrease in the share of general government expenditure to GDP and moderating the role of taxes and contributions (social insurance premiums) in the financing of healthcare expenditure.

In a social sense the EOEC health policy is limited to its own stated (sectoral) goals and does not intend to measure its efficiency by the health indicators of the population it affects. Its logic would therefore contribute to an increase in the legally acceptable differentiation of social inequality.

### ***Model scenario 3: Profit-making provider-led (PMPL) health policy***

The PMPL health policy may arise in an environment strongly dominated by market elements. Since the profit and non-profit making sectors co-exist in healthcare, the relative balance between these two is overturned and the profit-making sector will obtain virtually unlimited power in the determination of health policy outcomes.

The consequences from the point of view of the national health status seem tragic to the extreme and give cause for concern. The population, especially those who are sick, must spend more and more on healthcare and healthcare expenditure grows sharply and on a permanent basis. Some services, especially the more innovative ones, become available only to those above a certain level of income. Patient care becomes strongly polarised with a wide gap between the care for the rich and that for the poor. The government attempts to create a social safety net within the framework of the regulated market in order to ensure a minimum level of basic care for the needy.

Health maintenance is generally pushed to the background, appearing only in sporadic campaigns. At the same time, the affluent strata of society are ready to spend more money on the maintenance of health, partly due to their own well-perceived interests and partly as a response to the influence of the lifestyle industry. This further widens the public health gap between the rich and poor in the general health of population. The proportion of healthcare expenditure to Hungary's GDP approaches ten per cent. Public

funding is focused mainly on socially vulnerable groups (the elderly and disadvantaged) and thus gradually loses its importance in health expenditure. A new kind of health insurance system emerges with only minimal social security elements. The majority of the population relies on private health insurance or at least buys supplementary insurance. Long waiting lists emerge for basic healthcare services financed from public funds.

Private ownership dominates in the healthcare sector. A substantial proportion of hospitals become privatised and are run predominantly on a profit-making basis. Central and local government ownership shrinks to a minimum, dropping below ten per cent. Beyond these only church and foundation-owned institutions operate on a non-profit making basis.

The general health status of the population improves overall but there will be significant differences between various social groups. The health status of the under-educated strata with limited financial means stagnates at current levels or improves only slightly.

The role of the state in health provision is restricted primarily to health administration and public health matters. It is the responsibility of the social policy system to provide care for certain groups not covered by the regular healthcare system. This causes significant tension mainly at local government level.

## Recommendations

### COMPREHENSIVE RECOMMENDATION:

***‘Programme for a Healthy Hungary’ - a long-term national programme should be formulated and implemented***

This recommendation is based on the depressing fact described in detail in the Current Situation section, namely that the health status of the Hungarian population is extremely poor in international comparison. The intellectual, material and financial potential available for improving the quality of life and healthcare services has become severely limited, the instruments of health policy are outdated and the system is unable to maximise the utilisation of even the current financial and structural opportunities.

- ❑ The programme must be a multi-sectoral one; all levels of government should therefore take responsibility and coordinate their efforts under the professional guidance of the Ministry of Health. Furthermore, cooperation is needed between government and society in order to achieve health policy goals: this could be developed into a comprehensive national programme.
- ❑ The programme must focus on a healthier general lifestyle, an improvement of the environment and an increase in the intellectual and cultural level of the population. The success of this multi-sectoral programme requires appropriate funding.
- ❑ We recommend that the programme be funded not from the (current) healthcare budget but from a separate source (perhaps an extrabudgetary fund), guaranteed by law and gradually increasing in size.

The following recommendations describe the main elements of the programme.

### ***Formulation and implementation of a government policy centred around health***

The introduction of a comprehensive strategic programme must be accompanied by a change in the way of thinking, ensuring that the continuous improvement of the population's health status becomes a primary goal both for government and society. Various measures are required to achieve this goal:

- ❑ Hungary should also pursue a socio-economic policy that treats health as an asset and requires a mandatory, systematic analysis of the general health consequences of government decisions. The decrease in the share of GDP spent on public healthcare financing must be curtailed and the possibility of an increase in the publicly financed part of healthcare expenditure must be examined.
- ❑ Equal opportunities should become a fundamental goal: it is necessary to lessen the current wide disparities in the health status of the various social strata. This principle must be borne in mind in determining the ratio of public to private health expenditure and when defining the proportions between the funding systems (resource allocation mechanisms).
- ❑ Combating risk and health hazard (damage) factors is an important goal: in this field priority should be given to fighting tobacco, alcohol and drug abuse. Protecting the younger generations is particularly important in this context.

### ***Creating health awareness and positive attitudes towards health within the population***

- ❑ One of the basic pillars of the multi-sectoral health policy is a high level of education and a better lifestyle. Health education and instruction on factors influencing the quality of life should become mandatory subjects and form an integrated part of primary and secondary school curricula.
- ❑ The *mass media* and the *Internet* should play a major role in the promotion of a healthier lifestyle and as a means of disseminating information. The Internet also facilitates social self-organisation to a great extent, as is the case with the operation of patient self-help groups.

### ***Organisational and professional issues relating to healthcare***

An important element of the long-term health policy programme is the formulation and consistent implementation of a system model for healthcare.

- ❑ In Hungary the creation of a *planned market system* of healthcare is recommended. The market in this model consists primarily of competing non-profit making institutions. This model not only guarantees the decentralisation of planning but also a significant decrease in the influence of the bureaucratic elements of decision-making. The right to choose GPs (physicians) freely and the various forms of performance-related financing (e.g. fee for services or DRG) in patient care should all be considered as market elements within the planned market system.
- ❑ A neglected issue in health policy, although important from an economic point of view, is the development of home care. This could on the one hand ease the

hospital workload, and on the other make up for the lack of follow-up treatment or nursing homes in a much more family-friendly approach.

- The central definition of priorities and areas enjoying preferential treatment within healthcare can be crucial. Various organisational forms and types of financial support should be directed to the following areas of patient care (the order in the list is not intended to suggest an order of priorities):
  - Given the unfavourable demographic situation in Hungary, special attention should be given to the reduction of infant mortality and to monitoring and maintaining the health of children. The diagnosis (identification) and treatment of some specific diseases and disorders at the earliest possible stage should also be a focus.
  - The high frequency and mortality rates of malignant tumours may only be reduced by prevention, the introduction of screening, early diagnosis and appropriate and effective treatment. A special national programme should deal with this issue, including the collection and processing of accurate regional epidemiological data, the introduction and efficient implementation of various mandatory screening programmes, the construction of the necessary means to provide early diagnosis and the fast and immediate introduction of protocol-based optimal therapies.
  - Cardiovascular and cerebrovascular diseases are a major cause of death amongst the middle-aged population. This justifies the further development of a multi-level system of health provision with regard to national tasks. These tasks include emergency care, the ambulance service and the establishment and operation of intensive care surgery wards at high standards.
  - Some 10 to 20 per cent of the nation suffers from various allergies. Reducing this ratio and providing appropriate care for allergy patients are important health policy goals.
  - Similarly important is the large-scale establishment of mental health programmes with high-level institutional backgrounds.
  - It is the task of the national institutions that are responsible for coordination to formulate protocols, procedures and therapy descriptions for modern evidence-based medicine and to introduce and implement the methods and requirements of evidence-based medicine in practice.
- The wages and incomes of healthcare employees should rank amongst the top five sectors of the national economy and the system of gratuities should be abolished.<sup>4</sup>

### ***Education, training and information technology issues relating to healthcare***

- A basic condition for effective care in the health service is the application of information science and technology. Whilst it is important for the various units of the healthcare system to have the widest possible access to the information

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<sup>4</sup> Without a substantial increase in wages, the important progressive care and public health institutions will suffer lasting labour shortages, falling professional standards, a preponderance of the market mentality and the fragmentation of care.

technology network, top level information technology should be concentrated in regional and national centres.

- ❑ Information science in healthcare is increasingly emerging as a provider of solutions. In addition to precise, reliable epidemiological statistics, digital access to standardised diagnostic examination results is absolutely necessary. However, it is important to avoid the parallel use of different IT systems ('as many systems as hospitals').
- ❑ The basis for development is the improvement and accessibility of education for healthcare workers at all levels. The college education of nurses and the vocational training of healthcare workers should be given more emphasis, along with the production of a labour force with various skills to replace physicians in the administrative fields. Enrolment in medical universities should be regulated by the *numerus clausus* system (maintaining the planning and regulation of output) while the quality requirements of the entrance examination system should be improved. Multi-lingual medical training for foreign students will gain even more importance in the future, as this area is crucial from the perspective of the nation's international contact network.
- ❑ It is important to train teachers who are knowledgeable in health education and able to teach health and healthy lifestyles at all levels of instruction.

#### ***Increased support for domestic research in life sciences***

Hungarian research in life sciences is extensive and internationally recognised. This research must be supported even more by science policy.

- ❑ A separate state fund (extrabudgetary fund) is needed to service the specific funding requirements of life sciences and healthcare research. Hungary has some attractive characteristics (high technical background, good diagnostic potential, relatively cheap labour) to offer to foreign companies wishing to contract out some R&D work (relying on outsourcing to some extent).
- ❑ When determining the topics for healthcare research, preference should be given to prevention and to research objectives that may help to solve the major public health issues (such as cardiovascular diseases, malignant tumours, allergies, infectology, and vaccinations), and to the preferred issues in EU programmes.

Foreign capital has not yet established regional R&D centres in the pharmaceutical industry like it has in other industries in Hungary, although the qualified personnel are available in the country.

- ❑ It would therefore be beneficial for the government to provide proper incentives to make Hungary an attractive venue for pharmaceutical R&D and encourage major international pharmaceutical companies to create R&D centres in the country.

#### ***The efforts of small and medium enterprises to meet the various needs of the health industry***

A separate healthcare and lifestyles industry is now taking shape in Hungary. This phenomenon may have crucial consequences for small and medium enterprises. The development of the SME sector in this field appears important not only for the

healthcare sector but for the economic development of the nation as a whole. Production from this industry may primarily be exported to Eastern and Central European markets. The product range could cover ancillary healthcare devices, smaller technical instruments requiring high technology, and diagnostic tools (for the measurement of blood sugar, blood pressure, heart rhythm and metabolic parameters). Another important area for the SME sector could comprise special food industry products, including organic food and various dietary supplements. Organic products used in alternative medicine or the products used in phytotherapy are also included in this product range.